DOCUMENT RESUME

ED 171 216 HE 011 300

AUTHOR	Cashin, William E.; And Others
TITLE	Answering and Asking Questions: A Practical Guide for IDEA Users.
INSTITUTION	Kansas State Univ., Manhattan. Center for Faculty Evaluation and Development in Higher Education.
SPONS AGENCY	Kellogg Foundation, Battle Creek, Mich.
PUB DATE	76
NOTE	21p.
AVAILABLE FROM	Center for Faculty Evaluation and Development in Higher Education, 1627 Anderson Ave., Box 3000, Manhattan, KS 66502
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Classroom Environment; Cognitive Processes; College Faculty; *College Instruction; *Discussion (Teaching Technique); *Effective Teaching; Higher Education; Lecture; *Questioning Techniques; Resource Guides; *Teaching Skills

ABSTRACT

This guide is concerned with the answering and asking of questions in college-level courses. Suggestions are offered regarding questioning techniques that are appropriate for lecture classes as well as for discussion groups. Ways to help students answer their own questions are to repeat the question by paraphrasing it, redirecting the question, asking probing questions, and promoting a discussion among the students. Four additional ways of responding to students' questions are: directly answering the questions, postponing answers, discouraging inappropriate questions, and admitting your ignorance. Two aspects of questions that the instructor asks are closed-ended vs. open-ended questions, and convergent vs. divergent questions. Various cognitive or intellectual levels toward which questions may be directed are memory, translation, interpretation, application, analysis, synthesis, and evaluation. It is suggested that pauses and silence can play a useful role in both lecture and discussion classes, and that it is also desirable for the instructor to create an atmosphere where students are not afraid to ask questions for fear of embarrassment. Suggestions for creating such an atmosphere are offered. A brief annotated list of further readings is included. (SW)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED171216

ANSWERING AND ASKING QUESTIONS

A Practical Guide for IDEA Users

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Center for Faculty Evaluation & Development

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

William E. Cashin

Stephen C. Brock

Richard E. Owens

HE 011 308

Center for Faculty Evaluation and Development
in Higher Education
1627 Anderson Avenue, Box 3000
Manhattan, Kansas 66502

Copyright © Center for Faculty Evaluation and Development in Higher Education, 1976.

The Center is supported in part by a grant from the W. K. Kellogg Foundation of Battle Creek, Michigan.

Permission is hereby granted to reproduce single copies of this Guide for non-profit, instructional use.

Multiple copies may be reproduced by institutions having Memorandums of Agreement with the Center during the period of the Memorandum for non-profit, instructional use within that institution.

Other individuals or institutions which wish to reproduce multiple copies for non-profit, instructional use should obtain written permission from the Center.

Introduction to "Practical Guides"

A major flaw with most student evaluations of teaching, or any evaluation of teaching, is that, having pointed out where there might be room for improvement, they have little to offer about possible means of improvement. These "practical guides" are an attempt to remedy that situation for IDEA users. Typically, the IDEA Report identifies specific teaching methods needing improvement which are related to the instructor's course objectives where the students reported average progress or less. These practical guides will make concrete suggestions about ways to improve teaching. Although the suggestions presented in these guides are written in the context of the IDEA System, most of the suggestions are taken from the general literature on college teaching and so should be of help to any college teacher seeking to improve upon a given teaching technique.

A basic assumption which underlies these guides, and the IDEA System as well, is the belief that there is no SINGLE, CORRECT way to teach. The effectiveness of one's teaching depends upon a multitude of factors including: the objectives of the particular course; the teaching style and other traits of the instructor; and such student characteristics as learning ability, background, motivation to take the course, educational goals, etc. Because of this, these guides will suggest various alternatives and leave to the individual instructor the selection of those which seem more promising.

It is strongly recommended that each instructor employ a variety of methods to obtain feedback concerning the relative success of the alternatives attempted. We particularly recommend that you discuss your attempts to improve your teaching directly with your students. They are, after all, the people who are supposed to be learning.

October, 1976

William E. Cashin
Stephen C. Brock
Richard E. Owens

ANSWERING AND ASKING QUESTIONS

A Practical Guide for IDEA Users

This guide is concerned with the answering and asking of questions* in college-level courses. Although only one item on the IDEA Survey Form:

2. Found ways to help students answer their questions,

is directly concerned with questioning behavior, other IDEA items related to discussion imply the answering and asking of questions. This guide will make suggestions regarding questioning techniques that are appropriate for lecture classes as well as for discussion groups. (A separate guide will treat teaching methods suitable mainly for discussion groups.)

This guide is divided into six parts plus a post script.

I. Item 2, IDEA Survey Form
II. Answering Questions
III. Asking Questions
IV. Levels of Questions
V. Pauses and Silences
VI. Creating and Accepting Atmosphere

---

* In this guide we will use the terms "question", "answer" (response), and "reaction" as adapted from Hyman (1974):

Question -- any eliciting of an answer regardless of grammatical form,

Answer -- any response which fulfills the expectation of the question.

Where it will serve a useful purpose, we will distinguish a reaction from an answer.

Reaction -- any response which modifies (clarifies, expands) or rates (positively or negatively) a previous statement (question, answer, or another reaction).

EXAMPLE: Tell me who is president of the United States. (Question)
That's too easy. (Reaction of question)
No, it isn't. (Reaction to previous reaction)
Ford, I believe. (Answer)

I. ITEM 2, IDEA SURVEY FORM

2. Found ways to help students answer their own questions.

Item 2, and so this section, focuses upon those things which you can do to help your students answer their own questions.

We recommend that whenever you try to interpret IDEA Report data, or try to improve any teaching method, you ask yourself: what exactly goes on in class? what do I do? what do the students do? Imagine yourself in class when one of the students asks you a question. What do you usually do?* It is quite possible that you simply answer it. We are not suggesting that this is always inappropriate, but directly answering a question does not always help students learn to answer their own questions. Depending upon your course objectives you may want the students to answer their own questions, for example, if one of your objectives is that the students learn to apply course material to improve rational thinking, problem-solving and decision making.

Given that you wish to help your students answer their own questions, what are some things which you can do when asked a question?

A. REPEAT the question, paraphrasing it. This serves two purposes: it insures that the entire class hears the question; more importantly, it lets the student who asked the question check your understanding of the question. When you have not completely understood, often the student will rephrase or elaborate upon the question. In doing so the student is often "thinking out loud" and may come to his own conclusions without further help. This process also gives the other students time to think about the question and possible answers to it.

EXAMPLE (Introductory Psychology)

(1) Student: You've said that learning is defined as changes in behavior which result from past experience, but can't people learn without any change being apparent? (Question 1)

(2) Instructor: You're questioning whether learning has to be tied to observable change, (Reaction to 1) right Ann? (Question 2)

---

* It may be that in trying to recollect or recreate classroom behavior, you may not remember important details. If this tends to be a problem, occasionally audiotaping some of your classes may yield a wealth of detailed information, things that you were not aware of at all. Most institutions have such equipment. If yours does not, you yourself might want to purchase inexpensive ($20-$30) equipment that will serve the purpose. If your institution has the capability of videotaping your class, you might also wish to try that, but you will need the help of at least one other person in order to run the equipment.

(3) Student: Right, (Answer to 2) although given our definition of psychology, I guess it would have to be perceivable in some way. (Reaction to 2 and Answer to 1)

B. REDIRECT the question. You might ask another student (one you feel knows the answer) to respond; or you might redirect the question to the class in general, asking for an answer or comment, or an elaboration upon the issue. This procedure not only encourages more student participation; it also implies that peers are a resource for learning.

EXAMPLE B (Freshman Seminar on Urban Problems)

(1) St. 1: If people know about all of these harmful effects which pollute the environment, why doesn't the government stop the polluters? (Question 1)

(2) Inst.: Bill is asking, why don't our political leaders do something about those things which we know hurt the environment. (Reaction to 1, paraphrasing it.) What are some reasons the rest of you can think of that might explain this apparently illogical behavior? (Question 2, redirecting 1 to entire class.)

(3) St. 2: Well, many of the things people do which cause pollution also have a lot of benefits, factories produce goods we want, provide jobs. . . . (Answer to 1 & 2)

C. Ask PROBING questions. You might respond to the student's question by directing her attention to a particular aspect of the issue she has raised, or drawing her attention to some previously learned course material which is relevant to answering the question or by going beyond what the student has said in some way. The intent of probing questions is to draw the student's attention to things which may be only implied in her answer, and so help her answer her own question.

EXAMPLE (American History)

(1) St.: I think you can argue that the American Revolution wasn't justified. The colonists were better off than most Europeans. (Question 1)

(2) Inst.: That's a good point, Cindy. (Reaction to 1, praising student) It might help if we considered how the British government treated the colonists compared with their treatment of people living in England. (Question 2)

(3) St.: Well, it was true that the colonists thought that they were not given the rights of British citizens. (Answer to 2)

COMMENT: The instructor's question (2) focuses upon comparing the colonists with Englishmen rather that with other Europeans. The instructor implies that this is a more appropriate comparison (because the colonists thought of themselves as deserving the rights of Englishmen). The instructor's reaction to (1) in the previous example illustrating repeating the question, focused the student's attention on the observability of changes in learning. This was relevant in the context of a psychology (defined as the study of behavior) course where behavior is typically taken to mean any "observable activity of an organism." The student acknowledges this in her answer when she uses the word "perceivable."

D. Promote a DISCUSSION among the students. The three previous suggestions usually involve communication between two people, typically the instructor and one student, with the rest of the class simply listening. It may be that you will want to involve the majority of students in trying to answer some questions, for example, where there is considerable difference of opinion about the answer.

EXAMPLE (Human Sexuality)

(1) St. 1: It really seems to me that abortion has to be considered murder, no matter what "justification" people give for it.

(2) St. 2: I disagree, that is just repeating some abstract principle without considering the other side of the argument, for example, a woman who has been raped.

(3) Inst.: These two comments, together with other things members of the class have said, suggest to me that there are strong disagreements about abortion. I think it might help if we spent some time discussing it. I'd like you to get into buzz groups* of three or four people each and spend about five minutes coming up with as many arguments for and against abortion as you can. When you've finished we'll list them on the board.

One reaction we generally do NOT recommend when a student asks a question is to assign that student the task of looking up the answer. Frequently all this practice accomplishes is to teach the class not to ask questions.

---

*Discussion techniques will be treated in detail in a practical guide on discussion techniques.

II. ANSWERING QUESTIONS

Since Part I concentrated upon ways to help students answer their own questions, the suggestions dealt with reactions to student questions rather than answers. The remaining parts of this guide discuss various aspects of questioning behavior which are not necessarily directed towards helping students answer their own questions, but which may be of interest to college teachers. This part offers four additional ways of responding to student's questions: directly answering the questions, postponing answers, discouraging inappropriate questions, and admitting your ignorance.

A. Directly ANSWER the question. One obvious option an instructor has when a student asks a question, is to answer it. In general we no NOT recommend answering a student's question directly if an instructor wishes to foster discussion, with the possible exception of questions asking for information which other students in the class are not likely to have or questions asking for the instructor's opinion. Directly answering questions tends to take less time than attempting to have the student or the class come up with answers, however. If you choose to answer directly, make your answer brief and to the point. After responding you may want to check to see if you have really answered the question by saying something like: "Have I really answered your question?" or "Was that what you were asking?" etc.

Sometimes an instructor would like to use a student's question as an opportunity to bring in a related topic which the instructor wishes to cover, reasoning that students learn better when they see the material as relevant to their own interests. This should be done with care or it may only confuse everyone. Answer the student's question first, then be explicit that you are covering someting else that is on your agenda.

EXAMPLE (Introduction to Literature)

(1) St.: Who wrote the first novel in English? (Question 1)

(2) Inst.: Most experts consider Samuel Richardson to be the first modern English novelist. (Answer to 1) He wrote Pamela in 1740. (Elaboration of answer) While we are on the topic of the novel, I'd like to . . . . (Instructor clues the class that she is going beyond the student's question.)

COMMENT: It is not unusual when the instructor herself is handling a discussion or recitation section of a course for which she gives the lectures, to use the occasion of students' asking questions about material previously covered to add new material

which could not be included in the lectures because of lack of time. We recommend AGAINST this; one study suggests that it serves primarily to confuse the students and makes them feel less positive about the course when compared with recitation sections handled by GTA's who primarily answer questions to clarify those parts of the lecture which some students did not understand.

B. POSTPONE answering the question. Students are more likely to learn and remember if the instructor answers their questions when they ask them. Nevertheless, on certain occasions you may decide to put off answering a question, for instance: when you are very short of time, especially if the answer is complex; when the material will be covered soon in the lecture; or when the answer is of interest to only a few students. When the material is covered later in the lecture, call it to the student's attention: "Here is the answer to the question you asked before, Frank . . . . " If the answer will not be covered during the lecture, we recommend that you offer to answer it after class or make an appointment to get together with the student sometime. By doing this you very clearly communicate to all of the students your willingness to try to answer their questions. Generally, you should answer more questions than you postpone or you are likely to find the students asking fewer and fewer questions.

EXAMPLE (Physiology)

(1) St.: Doctor, I still don't really understand the Krebs cycle, could we review it, please? (Question 1)

(2) Inst. Fred, we're running out of time. (Reaction to 1) Can you see me after class and we'll arrange a time when we can get together for a half hour or so? (Question 2) For now follow as best you can. (Further reaction to 1 letting student know that the instructor is aware of the learning problem.)

C. DISCOURAGE inappropriate questions. Usually students ask questions because they wish to learn, but once in a while a student may ask a question to sidetrack the class, to get attention, or even to embarass the instructor. Handling such questions presents a dilemma. If you treat them like other questions you may encourage the student to ask more of the same, but if you turn that student down cold you may discourage not only that student but the rest of the class from asking any kind of question. In reacting, it is probably best to tactfully indicate what about the question is inappropriate.

EXAMPLE (Physics I)

(1) Inst.: Any questions about the material we covered last class? (Question 1)

(2) St.: I don't have a question about that (Answer to 1) but I was reading about a physicist who has a theory about racial inferiority and I don't see what right a physicist has to teach something like that outside of his field. (Question 2)

(3) Inst.: That's a legitimate question, Gail, since this is an introductory physics course (Reaction to question 2 supporting student) but it takes us pretty far afield from vectors and forces. (Further reaction, raising issue of appropriateness) How many students would like to spend some class time talking about Gail's question?

(4) St.: (Only a few students raise their hands. Answer to question 3)

(5) Inst.: Well, why don't you five see me after class and we can set up a time to get together to discuss it. (Reaction to answer 4)

COMMENT: If a majority of the class indicated an interest in discussing the topic, perhaps the instructor would want to spend some of the class's time, especially if one of the important objectives of the course was for the students to gain a broader understanding and appreciation of science. It seems to us that lecture outlines and course syllabi are not railroad tracks that you must never leave, rather they are the main road that you want to get back to after some interesting side trips. On the other hand, if the primary objective of the course was for the students to learn skills needed in their prospective professions, the instructor might simply suggest a meeting outside of class or perhaps merely recommend one or two articles discussing the question which interested students could then read.

New teachers especially are often uncertain how to tell whether a student really wants an answer or has some other purpose. This is probably best learned through experience and new teachers will have to use their own judgment. One criterion is how relevant the point of the question is to what the class is trying to accomplish.

D. ADMIT your ignorance. If you do not know the answer to a student's question, we recommend that you say so. Although one of the roles of a college teacher is that of "expert" and "information source," admitting that you do not know the answer to a question will probably not damage the students' confidence in you. In fact, giving the students clues about how certain you are of your answers is likely to increase their confidence in you, for

example: "The experts agree that . . . .," "as I recall they found . . . .," "I'll have to look that up . . . .," etc. On the other hand if you try to fake it, there is a good chance the students will find you out and your credibility will be seriously damaged. Unless the question is tangential to the objectives of the course, we recommend that you assume responsibility for finding the answer to questions you do not know and report back to the entire class.

EXAMPLE (Food Management)

(1) St.: What effect does the use of the preservative BHT have on the amount of breakage in cookies? (Question 1)

(2) Inst.: That's a good question, Howard, (Reaction to 1) unfortunately I don't have a good answer. I don't know. (Answer to 1) I'll have to find out and let you know. (Further reaction.)

(3) Inst.: (Next class) Regarding Howard's question last class about the effect of BHT on the breakage of cookies, what they have found is . . . .

III. ASKING QUESTIONS

The previous two parts have discussed ways to respond to students' questions. This part discusses two aspects of questions which the instructor asks: closed-ended vs. open-ended questions, and convergent vs. divergent questions.

A. Ask OPEN-ENDED, as well as CLOSED-ENDED questions. A closed-ended question structures the response for the student and can be answered by one word, often "yes" or "no", or by a very brief phrase. An open-ended question leaves the direction of the answer up to the person answering and so elicits much more thinking or information.

EXAMPLE (Counseling)

(1) Inst.: If one of your counselees told you that she had plagerized most of her doctoral dissertation, would you report it to her major professor? (Closed-ended question. Can be answered by a "yes" or "no.")

(2) Inst.: If one of your counselees told you that she had plagerized most of her doctoral dissertation, would you report it directly to her major professor, inform the major professor anonymously, or say nothing? (This is also a closed-ended question, the instructor has given the student three choices.)

(3) Inst.: If one of your counselees told you that she had plagerized most of her doctoral dissertation, what action would you take concerning informing her major professor? (Open-ended, probing question leaves choices of answer up to the student.)

Closed-ended questions are most appropriate when the instructor wants to check whether the students have learned or remember specific information, or to get or keep their attention. If an instructor wishes to encourage student involvement, open-ended questions are preferable because they require greater student response. Instructors sometimes complain that students never enter into a discussion, that they answer only in monosyllables. This may be because that is the only kind of answers the instructor's questions permit.

B. Ask DIVERGENT as well as CONVERGENT questions. The distinction between convergent and divergent questions is whether students are expected to approach a single or accepted, "correct" answer (convergent questions) or allowed the freedom to pursue a number of possible solutions, many of which may be acceptable (divergent questions). Convergent questions may expect the student to repeat some conventional wisdom. Divergent questions often require new, creative insights.

EXAMPLE (Sociology)

(1) Inst.: According to your textbook, in what ways does the present welfare system solve the problems of poverty? (Convergent question, the range of acceptable answers is determined by the textbook.)

(2) Inst.: What are some ways in which the country might solve the problems of poverty? (Divergent question. A wide range of acceptable answers are possible.)

COMMENT: Notice that question 1 is an open-ended question as well as a convergent one. Convergent questions can also be closed-ended; divergent questions must always be open-ended.

Some answers to divergent questions may be more acceptable than others in terms of logical consistency, synthesis of relevant data, solutions of major aspects of the problem, etc. The major advantage in asking divergent questions is that the task they set for the students is to think about an issue or problem, not to discover the "correct" answer or the answer the teacher is looking for. Usually students are more willing to attempt answering divergent questions because they run less of a risk of giving a "wrong" answer. Also divergent questions require a "higher" level of thinking. They cannot be answered by just memory (unless the student has already been exposed to answers to the question).

We have emphasized divergent questions because they are employed less frequently, even in college-level instruction. We do not mean to imply that instructors should not ask convergent questions. Inasmuch, much of what is taught at the college-level deals with correct answers: convergent questions are obviously appropriate. What we do wish to caution against is only using convergent questions where one is trying to teach divergent thinking.

IV. LEVELS OF QUESTIONS

In the previous three parts we have made several recommendations concerning how to improve questioning. This part considers the various cognitive or intellectual levels towards which questions may be directed. It is more descriptive than prescriptive. Our purpose is to promote awareness of the various levels of the questions you ask; we do not suggest that questions be only at certain levels. The levels of your questions should depend primarily upon your course objectives. To that extent this discussion belongs more properly in a practical guide on developing course objectives. Because of the already extensive literature on objectives, however, we do not plan to write such a guide. We suggest that the interested reader consult either Gronlund (1970), or Mayer (1962).

There is often a discrepancy between what an instructor hopes to accomplish in a given course and the kind of questions asked, both in the classroom and on tests. All too often an instructor will say that the students should develop the ability to think for themselves, to solve problems, and to make practical applications; but a closer look at the questions asked in the course reveals that they require little more than remembering material covered in the class or in the textbook. Unfortunately this tends to be especially true of exam questions.

The discussion in this section borrows heavily from Sanders (1966) which in turn was based upon Bloom et al. (1956). Sanders expanded Bloom's six levels to seven: memory, translation, interpretation, application, analysis, synthesis, and evaluation. Each will be described briefly.

A. MEMORY. All that is required at this level is that the student remember, either by recall or recognition, information that has been previously learned. This is the lowest level of question or cognitive objective, but it is a prequisite for all of the others.

EXAMPLE (American History) How many years elapsed between the signing of the Declaration of Independence and the ratification of the Constitution?

COMMENT: Some typical words associated with questions at this level are: name, list, tell, define, who, what, when did, was, is, how many, how much, recall, identify. (Taken from Bernstein et al., 1975 and Gronlund, 1970)

C. TRANSLATION. This level requires that an answer be expressed in a form different from that in which it was presented: different words, symbols, pictures, etc.

EXAMPLE: (Marketing) Describe in your own words what this graph means.

COMMENT: Typical question words: convert, describe in your own words, paraphrase, summarize, translate.

D. INTERPRETATION. This level requires that the student demonstrates understanding or comprehension beyond simply remembering the answer. Often the student must relate facts, generalizations, definitions, skills, values, etc., but at a simple level.

EXAMPLE: (Economics) Explain the effect of following the law of comparative advantage on a nation's economic self-sufficiency?

COMMENT: Typical question words: compare, contrast, explain, give an example, what do you infer, what caused.

E. APPLICATION. This requires that the student applies learned materials, facts, generalizations, skills, etc., to a new and concrete situation. Often the student must solve an unfamiliar problem by identifying the relevant issue or information and/or deciding upon an appropriate course of action. (The solution to complex problems, however, usually requires analysis and synthesis.)

EXAMPLE: (Abnormal Psychology) Lady Macbeth's repeated washing of her hands to wash away her guilt after the murder of Duncan is an example of what neurotic defense mechanism? (Assuming that this example was not used in class or in the text.)

COMMENT: Typical question words: calculate, decide, predict, produce, solve.

F. ANALYSIS. Answering this kind of question requires that the student become aware of the specific parts of the problem. The student must break down the question into its component parts, so that the relationships among the various parts and the overall structure can be understood before the question can be answered or the problem solved.

EXAMPLE: (Classical Literature) Read the following Latin passage and decide whether it was written by a classical or patristic author. Identify from the passage those elements of style which you think support your position and point out how they are characteristic of that period.

COMMENT: Typical question words: diagram, distinguish, point out, select, what does the author assume, what methods are used, what reasons are given, what words indicate bias.

G. SYNTHESIS: This level requires that the student put two or more elements or parts into a new (at least for the student) combination or whole. The student creates a "new" communication, plan, abstract relationship, etc. Original and creative thinking may be involved.

EXAMPLE: (Philosophy) Write an essay on the topic: Locke, the key to Hume. Specifically you should describe those aspects of the philosophy of David Hume which were influenced by John Locke, and point out how they relate to Locke's philosophy.

COMMENT: Typical question words: compose, create, devise, plan, reorganize.

H. EVALUATION. The student must judge the degree to which something meets a definite standard or criterion, either internal to the material (e.g., its organization or logical consistency), some external standard or convention (e.g., grammatical correctness, or legality), or some set of criteria specified by the student.

EXAMPLE: (International Relations) Discuss the question: Should the development of Third-World nations be based principally on capital intensive approaches? Include in your discussion a description of the norms which you think must be considered in choosing strategies for developing such countries and how the relevant facts support your answer.

COMMENT: Typical question words: appraise, criticize, evaluate, judge, support.

Both Sanders and Bloom consider these levels to be hierarchical, that is, thinking at any one level is assumed to include the cognitive skills of all the lower levels. Therefore, application would include interpretation, translation, and memory. This is an important notion because usually a case can be made that a question taps several levels. What must be determined is the highest level of the question being asked or the objective taught.

For the purposes of improving your questioning techniques it is not essential that you be able to classify every question with certainty. It is important that you be aware of the various levels and that you suit the level of your questions to the level of your objectives. If you want your students to learn to apply the material, do not ask only memory or interpretation questions.

V. PAUSES AND SILENCE

One difficulty found by both novice and veteran instructors is deciding how to handle pauses and silence after asking a question. We will argue that pauses and silence can play a useful role in both lecture and discussion classes.

A. WAIT, pauses and silence are NOT INAPPROPRIATE class behaviors. The discomfort many, if not most, instructors feel when a pause leads to an extended silence probably stems from a cultural norm for social conversation where the silence is taken to mean that there is some inadequacy in the communication. This discomfort is often especially acute for new teachers or teachers who lack self-confidence. If such an instructor were to tape record his class, he might find that these pauses actually last only a few seconds, very often less than five, not the "eternity" it seemed during the wait. In the classroom, constant talking is neither required nor desirable.

B. WAIT, give the students TIME TO THINK. The basic reason for pausing after asking a question is to give the students time to think about possible answers. If the question is worthwhile (and more than rhetorical), even at the memory level, it deserves a wait. Questions at higher levels may require considerable time for students to think about before they can adequately answer them.

After an appropriate wait (listening to tape recordings of one's class is a useful means of checking whether the length of the pause was appropriate), you may want to simply acknowledge the pause by saying something like: "It's a difficult question and takes some time to think about." This clues the students that you are willing to wait for their responses. Or

you may want to rephrase the question or ask a probing question which would draw the students' attention to relevant information. If you really want the students to answer the question, you must give them enough time before you give up and answer the question yourself.

C. WAIT, or you will establish an UNDESIRABLE NORM. Classes, like any group, fairly quickly establish norms, that is, standards of what will be considered acceptable behavior in that class. If, in the first week or so, the instructor waits only a few seconds before answering his own questions, the class will quickly learn that when the instructor asks a question he does not expect an answer; wait a few seconds and he will answer it himself. Students are usually more than willing to let the instructor answer all of the questions. If you want your students to answer the questions you ask, you must be careful to cultivate that expectation by waiting after you ask a question.

VI. CREATING AN ACCEPTING ATMOSPHERE

If encouraging students to ask questions is desirable behavior in most college classrooms, then it is also desirable that the instructor create an atmosphere where students are not afraid to ask questions for fear of embarassment and the like. A few suggestions about creating such an atmosphere follow.

A. ASK for QUESTIONS. If you want the students to ask questions, give them opportunities to do so. Pause after making an important point or explaining a topic, or say "Any questions?" or "Are you with me?" or "Does everyone understand?" Such statements must be more than rhetorical or used as a technique for you to get your thoughts together before going to the next point, however. Give the students time to formulate their questions before you move on. And look at the students to make sure you do not miss someone with his/her hand raised.

We think pausing and asking for questions is a good teaching device to use routinely; but if you are aware that some students are confused, it becomes a must. Saying something like, "Some of you seem puzzled, what don't you understand?" when some students are frowning or shaking their heads should solicit questions which will help you clear up the misunderstanding. Some college professors feel that they have done their duty by exposing the material to the students. We feel that unless instructors help their students to learn, they are not teaching.

B. ANSWER QUESTIONS. If you want your students to ask questions, then you should reinforce them when they do by answering their questions. Therefore we suggest that you rarely postpone answering a question or ignore student questions, which is what we do if you do not call upon a student who has his hand up.

It is not unusal in a class of any size to have one or more students who tend to monopolize class time. One approach with such students is to give preference to those who have not yet said anything. This can be done explicitly by saying, "Let's take comments from people we haven't heard from," or "Vincent, I've already answered several of your questions, let's hear from some of the others first." Very often other students will ask "Vincent's question" and so he will get his answers but others will have a chance to participate. If he still has a question after everyone else's has been answered, you probably should let him ask it.

It is not uncommon for a class to have at least one student who appears to be antagonistic toward the instructor or hostile to the subject matter and who asks questions which serve only to express the student's disagreements, which often has little generalizability. Since such questions usually stem from emotional rather than intellectual concerns, answering on a cognitive level serves little purpose. It is probably best to see that student outside of class and explain what seems to be going on from your point of view. Often such a talk is sufficient to enable the student at least to censor the questions he asks in class, although it may do little to solve the underlying problem.

C. ANSWER students questions ADEQUATELY. It is not enough that you respond to the student's questions, but you must answer the question to the student's satisfaction as best as you can. Your answer should be concise and to the point, and you should ask the student if you have answered the question. This insures not only accurate communication of content but also says to the student "Your question is important and I will take the time necessary to answer it if I can." If, after two or three attempts you still have not answered satisfactorily then it is appropriate to suggest getting together after class.

D. LISTEN to the question, or to any student comment. The way you listen to a question or comment also communicates your attitude toward the students. Look at them when they are talking; show that you are following by nodding, etc.; check whether you really understand what they are saying by rephrasing the question.

Sometimes little things that we do unknowingly communicate something to students which is very different from what we intend. For example, one instructor used to occasionally take a look at his watch when a student would ask a question. He found out in the end-of-course evaluation that one student interpreted this to mean that the instructor felt the questions were wasting time, rather than that the instructor simply wanted to know what time it was.

E. DON'T PUT DOWN the students. In general, you should avoid anything which would embarass the student who asks the question. Here are a few instructor responses well-calculated to insure that the student asking the question will NOT ask any more questions, along with possible alternatives.

EXAMPLES

(Poor) That's a dumb question?
(Better) (Address why it's "dumb", if you must.)

(Poor) You should know that we covered that in . . . . "
(Better) What about . . . that we covered . . . weeks ago, how does that fit in?

(Poor) You're completely wrong.
(Better) How would you reconcile what you're saying with . . . (something previously covered).

(Poor) I entirely disagree.
(Better) I'm not sure I agree
or
I think I disagree, because . . . .

Rather than responding with a value judgment to a student's question or comment, ask a probing question. You may help the student arrive at the correct answer, or an acceptable answer; in which case, rather than proving the student "wrong", you have helped her to be "right."

POST SCRIPT

We hope that the distinctions and suggestions made in this practical guide will enable you to gain a clearer view of your classroom questioning behavior and so will help you to improve by increasing the number of alternatives available to you when considering how to handle questions in your classes. We would like to repeat our conviction that there is no one, correct approach, that several roads lead to Rome. The approach you finally decide upon will depend upon you, your students, your course objectives, and other unique considerations.

FURTHER READINGS

Bernstein, H.R. & The Center for Improvement of Undergraduate Education. Manual for teaching. Ithaca, NY: Cornell University, 1976.

This manual was developed for teaching assistants but contains a wealth of practical information about a variety of issues and techniques, including questioning, pertinent to college teaching that should be of use to most college teachers, not just teaching assistants or new faculty members. (228 pp.)

Bloom, B.S., et al. (Ed.) Taxonomy of educational objectives: cognitive domain. New York: David McKay, 1956.

A very detailed treatment of the work of the committee which originally developed these cognitive objectives. The taxonomy was originally developed to classify test questions but has been applied as a useful frame of reference for considering educational goals in general. This reference does not specifically treat questioning. (207 pp.)

Gronlund, N.E. Stating behavorial objectives for classroom instruction. New York: Macmillian, 1970.

This is a brief, practical treatment of behavioral objectives which should be very helpful to college teachers. It contains a short chapter (eight pages) on Bloom's Taxonomy. This reference does not treat questioning. (58 pp.)

Hyman, R.T. Ways of teaching. (2nd ed.) Philadelphia: Lippincott, 1974.

Although written for elementary and secondary education students, this book contains useful reviews and discussions of most of the teaching techniques of interest to college teachers, including a chapter on questioning and four chapters on discussion. (371 pp.)

Mager, R.F. Preparing instructional objectives. Palo Alto, CA: Fearon Publishers, 1962.

This is probably the classic book on behavioral objectives. Its step-by-step, leading-by-the-hand approach offends some college teachers, but the book is well worth the hour or two it takes to work through. This reference does not treat questioning. (60 pp.)

Sanders, N.M. Classroom questions: what kinds? New York: Harper & Row, 1966.

This book, which uses examples from high school social studies, is concerned with levels of questions (according to Bloom's Taxonomy) rather than questioning techniques. (176 pp.)